(Adopted August 3, 1990)(Amended September 7, 1990)(Amended August 12, 1994)
(Amended December 9, 1994)(Amended November 14, 1997)

RULE 1110.2 EMISSIONS FROM GASEOUS- AND LIQUID-FUELED ENGINES

(a) Purpose

The purpose of Rule 1110.2 is to reduce Oxides of Nitrogen (NO_x), Volatile Organic Compounds (VOCs), and Carbon Monoxide (CO) from engines.

(b) Applicability

All stationary and portable engines over 50 bhp are subject to this rule.

(c) Definitions

For the purpose of this rule, the following definitions shall apply:

(1) APPROVED EMISSION CONTROL PLAN is a control plan, approved by the Executive Officer prior to November 14, 1997, describing all actions and alternatives, including a schedule of increments of progress to meet or exceed the requirements or applicable emissions limitations in subparagraph (d)(1).

(2) EMERGENCY STANDBY ENGINE is an engine which operates as a temporary replacement for primary mechanical or electrical power during periods of fuel or energy shortage or while the primary power supply is under repair.

(3) ENGINE is any spark- or compression- ignited internal combustion engine, not including engines used for self-propulsion.

(4) EXEMPT COMPOUNDS are defined in District Rule 102 - Definition of Terms.

(5) FACILITY is one or more parcels of land in physical contact, or separated solely by a public roadway, on which engines operate.

(6) LOCATION means any single site at a building, structure, facility, or installation. For the purpose of this definition, a site is a space occupied or to be occupied by an engine. For engines which are brought to a facility to perform maintenance on equipment at its permanent or ordinary location, each maintenance site shall be a separate location.

(7) NON-ROAD ENGINE is any engine, defined under 40 Code of Federal Regulations (CFR) Part 89, that does not remain or will not remain at a location for more than 12 consecutive months, or a shorter period of time where such period is representative of normal annual source operation at a stationary source that resides at a fixed location for more than 12 months (e.g., seasonal operations such as canning facilities), and meets one of the following:

(A) Is used in or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as a mobile crane); or

(B) Is used in or on a piece of equipment that is intended to be propelled while performing its function (such as lawn mowers and string trimmers); or

(C) By itself, or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Transportability includes, but is not limited to, wheels, skids, carrying handles, dolly, trailer, platform or mounting.

(8) PORTABLE ENGINE is an engine that, by itself or in or on a piece of equipment, is designed to be and capable of being carried or moved from one location to another. Indications of portability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, platform or mounting. The owner or operator must demonstrate the necessity of the engine being periodically moved from one location to another because of the nature of the operation.

An engine is not portable if:

(A) the engine or its replacement remains or will reside at the same location for more than 12 consecutive months. Any engine, such as a back-up or stand-by engine, that replaces an engine at a location and is intended to perform the same function as the engine being replaced, will be included in calculating the consecutive time period. In that case, the cumulative time of both engines, including the time between the removal of the original engine and

installation of the replacement engine, will be counted toward the consecutive time period; or

(B) the engine remains or will reside at a location for less than 12 consecutive months where such a period represents the full length of normal annual source operations such as a seasonal source; or

(C) the engine is removed from one location for a period and then it or its equivalent is returned to the same location thereby circumventing the portable engine residence time requirements.

The period during which the engine is maintained at a designated storage facility shall be excluded from the residency time determination.

(9) RULE 1110.1 EMISSION CONTROL PLAN is a control plan required by Rule 1110.1.

(10) RATED BRAKE HORSEPOWER (bhp) is the rating specified by the manufacturer, without regard to any derating, and listed on the engine nameplate.

(11) STATIONARY ENGINE is an engine which is either attached to a foundation or if not so attached, remains or will remain at a single location for more than 12 consecutive months, including any replacement engine for a specific application which lasts or is intended to last for more than 12 consecutive months; or will reside at a location for less than 12 consecutive months where such a period represents the full length of normal annual source operations such as a seasonal source.

(12) VOLATILE ORGANIC COMPOUND (VOC) is any volatile compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds.

(d) Requirements

(1) Stationary Engines:

The owner/ operator of any stationary engine subject to this rule shall:

(A) Remove such engine permanently from service or replace the engine with an electric motor, or

(B) Reduce emissions from such engine, in accordance with the compliance schedule in paragraph (e)(1), to the compliance limits listed in TABLE I.

TABLE I
COMPLIANCE LIMITS

NO_x	VOC	CO
(ppm)[1]	(ppm)[1, 2]	(ppm)[1]
36	250	2000

[1] Corrected to 15% oxygen on a dry basis and averaged over 15 minutes.

[2] Measured as methane.

(C) Notwithstanding the provisions in subparagraph (d)(1)(B), the owner or operator of any stationary engines described in Table II may, in lieu of conversion to electrical power or permanent engine removal, reduce the engine CO emissions to no more than 2000 ppm by volume corrected to 15 percent oxygen on a dry basis and averaged over 15 minutes, and reduce the emissions of NO_x, and VOC measured as methane, from such engines to the compliance limit specified by the following formula:

COMPLIANCE LIMIT FORMULA

$$\text{Compliance Limit} = \text{Reference Limit} \times \frac{\text{EFF}}{25\%}$$

Where:

Compliance Limit = the allowable NO_x, or VOC emission limit (ppm by volume) corrected to 15 percent oxygen on a dry basis, and averaged over 15 consecutive minutes.

Reference Limit = the NO_x or VOC emission limit (ppm by volume) corrected to 15 percent oxygen on a dry basis. The reference limits for various bhp ratings (continuous rating by the manufacturer) are listed in TABLE III.

TABLE II **STATIONARY ENGINES DESCRIPTION**
For electric power generation
Fired by landfill gas
Fired by sewage digester gas
Used to drive a water supply or conveyance pump except for aeration facilities
Fired by oil field-produced gas
For integral engine-compressor applications operating less than 4000 hours per calendar year
Fired by liquefied petroleum gas (LPG)

TABLE III REFERENCE LIMITS, ppm		
Bhp Rating	NO_x	VOC
500 and greater	36	250
Greater Than 50 and Less Than 500	45	250

And,

EFF = the demonstrated percent efficiency at full load when averaged over 15 consecutive minutes of the engine only without consideration of any downstream energy recovery from the actual heat rate, in Btu/kW-hr, corrected to the HHV (higher heating value) of the fuel; or the manufacturer's continuous rated percent efficiency (manufacturer's rated efficiency) of the engine after correction from LHV (lower heating value) to the HHV of the fuel, whichever efficiency is higher. The value of EFF shall not be less than 25 percent. Engines with lower efficiencies will be assigned a 25-percent efficiency for this calculation.

$$EFF = \frac{3413 \times 100\%}{\text{Actual Heat Rate at HHV of Fuel (Btu/kW-hr)}}$$

or

$$EFF = (\text{Manufacturer's Rated Efficiency at LHV}) \times \frac{LHV}{HHV}$$

(2) Portable Engines:

The owner/operator of any portable engine subject to this rule shall:

(A) By December 31, 1999, reduce emissions from such engine to the applicable requirements of TABLE IV for spark-ignition engines, or TABLE V for compression-ignition engines;

(B) By January 1, 2010, meet the most stringent emissions standard which is the applicable emissions standard in effect and set forth in Title 13 of the California Code of Regulations for that engine rating. If no emissions standard exists under the California Code of Regulations, then the applicable emissions standard set forth in CFR 40 Part 89 shall apply. If no standard exists under the California Code of Regulations and CFR 40 Part 89, then the applicable requirements of TABLE IV for spark-ignition engines or TABLE V for compression-ignition engines shall apply; and

(C) Submit to the Executive Officer a letter certifying that the engine is in compliance with the provisions of the paragraph, in accordance with the compliance schedule in paragraph (e)(2).

TABLE IV
PORTABLE SPARK IGNITION ENGINES

NO_x	VOC	CO
80 ppm[3] (1.5 g/bhp-hr)	240 ppm[3] (1.5 g/bhp-hr)	176 ppm[3] (2.0 g/bhp-hr)

[3] Corrected to 15% oxygen on a dry basis and averaged over 15 minutes.

TABLE V **PORTABLE COMPRESSION-IGNITION ENGINES**	
Rated Brake Horsepower	Requirements
Greater Than 50 And Less Than 117	770 ppm[4] NO_x (10.0 g/bhp-hr), or turbocharger and 4-degree injection timing retard
Greater Than or Equal To 117 And Less Than 400	550 ppm[4] NO_x (7.2 g/bhp-hr), or turbocharger and aftercooler/intercooler and 4-degree injection timing retard
Greater Than or Equal To 400	535 ppm[4] NO_x (7.0 g/bhp-hr), or turbocharger and aftercooler/intercooler and 4-degree injection timing retard
[4] Corrected to 15% oxygen on a dry basis and averaged over 15 minutes.	

(e) Compliance

(1) Stationary Engines:

The owner/operator of stationary engines subject to the provisions of paragraph (d)(1) shall comply with the requirements of the paragraph in accordance with the following schedule:

(A) Owners/operators of stationary engines with an amended Rule 1110.1 Emission Control Plan submitted by July 1, 1991, or an Approved Emission Control Plan, designating the permanent removal of engines or the replacement of engines with electric motors, in accordance with subparagraph (d) (1)(A), shall do so by December 31, 1999, or reduce the emissions from the engines to the limits listed in Table VI in accordance with the following schedule:

(i) By January 1, 1999, submit applications for permit to construct and permit to operate the engines and control equipment;

(ii) By September 30, 1999, initiate control equipment installation; and

(iii) By December 31, 1999, have the engine under compliance.

TABLE VI ALTERNATIVE TO ELECTRIFICATION		
NO_x	VOC	CO
0.15 g/bhp-hr	0.15 g/bhp-hr	0.6 g/bhp-hr

(B) Owners/operators of stationary engines that were altered to come into compliance with subparagraph (c)(1)(A) or paragraph (c)(2) of Rule 1110.1 by August 3, 1990, or stationary engines originally installed to effect compliance with and/or meet the limits in subparagraph (c)(1)(A) or paragraph (c)(2) of Rule 1110.1 by August 3, 1990, shall:

(i) For engines for which engine modification or add-on control is used to comply with the provisions of paragraph (d)(1):

(I) By April 30, 2003, submit applications for permits to construct and operate engines and control equipment;

(II) By September 30, 2004, initiate engine modification or control equipment installation; and

(III) By December 31, 2004, be in compliance with subparagraph (d)(1)(B) or (d)(1)(C) of this rule as appropriate.

(ii) For engines to be permanently removed from service or replaced with electric motors, do so by December 31, 2004, or reduce the emissions from the engines to the limits listed in Table VI in accordance with the following schedule:.

(I) By April 30, 2003, submit applications for permits to construct and operate engines and control equipment;

(II) By September 30, 2004, initiate engine modification or control equipment installation; and

(III) By December 31, 2004, have engines under compliance.

Engines will be considered originally installed to effect compliance with subparagraph (c)(1)(A) or paragraph (c)(2) of Rule 1110.1 by August 3, 1990, if the owner/operator of engines, prior to August 3, 1990, has acquired a Permit to Construct for these engines and:

undertaken the complete installation of the engines; or

purchased and received the engines on site for installation; or

purchased custom fabricated engines for which fabrication has been substantially completed.

(C) Except as specified in subparagraph (e)(1)(B), or otherwise specified in an Approved Emission Control Plan or amended Rule 1110.1 Emission Control Plan submitted by July 1, 1991:

(i) Any stationary engine installed prior to December 31, 1994 shall be in compliance with the provisions of subparagraph (d)(1)(B), or (d)(1)(C) as appropriate by December 31, 1994.

(ii) Any stationary engine installed after December 31, 1994 but prior to November 14, 1997 shall be in compliance with the provisions of subparagraph (d)(1)(B), or (d)(1)(C) as appropriate before being placed into service.

(D) Any stationary engine installed after November 14, 1997 shall be in compliance with the provisions of subparagraph (d)(1)(B), or (d)(1)(C) as appropriate before being placed into service.

(2) Portable Engines:

The owner/operator of portable engines subject to the provisions of subparagraph (d)(2) shall:

(A) For engines for which engine modification or add-on control is used to comply with the applicable requirements of TABLE IV for spark-ignition engines, or TABLE V for compression-ignition engines :

(i) By April 30, 1998, submit applications for permit to construct and permit to operate engines;

(ii) By September 30, 1999, initiate engine modification or control equipment installation; and

(iii) By December 31, 1999, have engines in compliance with the applicable requirements of TABLE IV for spark-ignition engines, or TABLE V for compression-ignition engines.

(B) By December 31, 1999, if the engines are in compliance with the applicable requirements of TABLE IV for spark-ignition engines, or TABLE V for compression-ignition engines, submit to the Executive Officer a letter certifying that the engines are in compliance with the applicable requirements.

(C) For engines for which engine modification or add-on control is used to comply with the most stringent emissions standard as set forth in subparagraph (d)(2)(B):

(i) By April 30, 2008, submit applications for permit to construct and permit to operate engines;

(ii) By September 30, 2009, initiate engine modification or control equipment installation; and

(iii) By December 31, 2009, have engines in compliance with the most stringent emissions standard.

(D) By December 31, 2009, if the engines are in compliance with the most stringent emissions standard, submit to the Executive Officer a letter certifying that the engines are in compliance with the emissions standard.

(f) Monitoring and Recordkeeping

(1) Stationary engines:

The owner/operator of any engine subject to the provisions of subparagraph (d)(1)(B) or (d)(1)(C) of this rule shall meet the following requirements:

(A) For engines of 1000 bhp and greater, and operating more than two million bhp-hr per calendar year, install, operate and maintain in calibration a NO_x continuous emission monitoring system (CEMS) to demonstrate compliance with the emission limits of this rule. CEMS shall meet the requirements described in 40 CFR Part 60, particularly those in Appendix B, Spec. 2 and Appendix F, as well as the reporting requirements of CFR Part 60.7(c), 60.7(d), and

60.13, and shall include equipment that measures and records NO_x exhaust gas concentrations, corrected to 15 percent oxygen on a dry basis.

The owner/operator of an engine that is required to install CEMS may request the Executive Officer to approve an alternative monitoring device (or system components) to demonstrate compliance with the emission limits of this rule. The applicant shall demonstrate to the Executive Officer that the proposed alternative monitoring device is at a minimum equivalent in relative accuracy, precision, reliability, and timeliness to a CEMS for that engine, according to the criteria specified in 40 CFR Part 75 Subpart E. In lieu of the criteria specified in 40 CFR Part 75 Subpart E, substitute criteria is acceptable if the applicant demonstrates to the Executive Officer that the proposed alternative monitoring device is at minimum equivalent in relative accuracy precision, reliability, and timeliness to a CEMS for that engine. Upon approval by the Executive Officer, the substitute criteria shall be submitted to the federal Environmental Protection Agency (EPA) as an amendment to the State Implementation Plan (SIP).

If the alternative monitoring device is denied or fails to be recertified, a CEMS shall be required.

(B) For engines subject to the provisions of subparagraph (f)(1)(A), the monitoring system shall have data gathering and retrieval capability approved by the Executive Officer. Data shall be maintained for at least two years and made available for inspection by the Executive Officer.

(C) The engine shall have an operational non-resettable totalizing time meter to determine the engine elapsed operating time.

(D) Provide source test information regarding the exhaust gas, specifically for NO_x, VOC reported as methane, and CO concentrations (concentrations in ppm by volume, corrected to 15 percent oxygen on dry basis) at least once every 3 years. If the engine has not been operated within three months of the date a source test is required, the source test shall be conducted when the engine resumes operation for a period longer than either seven

consecutive days or 15 cumulative days of operation. The owner/operator of the engine shall keep sufficient operating records to demonstrate that it meets the requirements for extension of the source testing deadlines.

(E) Maintain a monthly engine operating log that includes:

(i) Total hours of operation;

(ii) Type of liquid and/or type of gaseous fuel;

(iii) Fuel consumption (cubic feet of gas or gallons of liquid); and

(iv) Cumulative hours of operation since the last source test required in subparagraph (f)(1)(D).

The log shall be available for inspection at any time.

(2) Portable engines:

The owner/operator of any portable engine subject to the provisions of paragraph (d)(2) shall maintain a monthly engine operating log that includes:

(A) Total hours of operation;

(B) Type of liquid and/or type of gaseous fuel; and

(C) Fuel consumption (cubic feet of gas or gallons of liquid).

The log shall be available for inspection at any time.

(g) Test Method

Testing to verify compliance with the applicable requirements shall be conducted in accordance with the test methods specified in TABLE VII, or any test methods approved by the California Air Resources Board (CARB) and EPA, and authorized by the Executive Officer.

TABLE VII
TESTING METHODS

Pollutant	Method
NO_x	EPA Test Method 20 or District Method 100.1
CO	EPA Test Method 10 or District Method 100.1
VOC	EPA Test Method 25 or District Method 25.1*

* Excluding ethane

A violation of any standard of this rule established by any of the specified test methods, or any test methods approved by the CARB or EPA, and authorized by the Executive Officer, shall constitute a violation of this rule.

(h) Technology Assessment for $PM_{2.5}$

The Executive Officer shall, by December 31, 1999, conduct a technology assessment to determine relative contribution of the engines, which operate for the manufacture of snow and/or operation of ski lifts, to potential $PM_{2.5}$ violations, and report to the Governing Board with recommended actions to be taken, if necessary, to ensure $PM_{2.5}$ standard compliance. In conducting the assessment, the Executive Officer shall consider any applicable future CARB surveys on $PM_{2.5}$ emissions.

(i) Exemptions

The provisions of subdivision (d) shall not apply to:

(1) Engines used directly and exclusively by the owner/operator for agricultural operations necessary for the growing of crops or raising of fowl or animals.

(2) Emergency standby engines as approved by the Executive Officer, which operate less than 200 hours per year as determined by an elapsed operating time meter.

(3) Engines used for fire-fighting and flood control.

(4) Laboratory engines used in research and testing purposes.

(5) Engines operated for purposes of performance verification and testing of engines.

(6) Engines operating in the Riverside County Southeast Desert Air Basin (SEDAB) area within the South Coast Air Quality Management District, but not including the non-attainment Planning Area of the Riverside County SEDAB.

(7) Auxiliary engines used to power other engines or gas turbines during start-ups.

(8) Supplemental engines which operate between November 1 of one year and April 15 of the following year for the manufacture of snow and/or operation of ski lifts.

(9) Portable engines that are registered under the state registration program pursuant to California Health and Safety Code Sections 41750 to 41755.

(10) Nonroad engines.

(11) Engines operating on San Clemente Island.